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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,422	12/12/2000	Yoshihisa Furuta	Q 62228	7788

7590 11/12/2002

Sughrue Mion Zinn
Macpeak & Seas
2100 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER

MUSSER, BARBARA J

ART UNIT	PAPER NUMBER
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1733

9

DATE MAILED: 11/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/719,422

Applicant(s)

FURUTA ET AL.

Examiner

Barbara J. Musser

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 07 October 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 2, it is unclear whether the tape carrier is in addition to the lead frame or in place of. For the purposes of examination, it is assumed to mean in place of. It is suggested claim 2 be re-written in independent form.

Regarding claim 3, it is unclear if applicant is only claiming an adhesive tape capable of being adhered to a lead frame or is actually claiming the lead frame and tape together as the phrase "to be adhered to a lead frame" could suggest either. From a reading of applicant's specification, it would appear that the tape itself is known but not its use with lead frames. For the purposes of examination, it is assumed to only be claiming a tape capable of use with a lead frame.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claim 3 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakumoto et al.

Sakumoto et al. discloses an adhesive tape for use with electrical components with a thermal shrinkage of less than 0.15% in the resin deposition temperature range.(Col. 7, ll. 56-59) The tape is attached to a lead frame used with semiconductors with are sealed with resin after the chips are mounted.(Col. 1, ll. 15-35) Although the tape is not specifically disclosed as pressure sensitive, the tape is applied without the use of heat, but simply via attachment.(Col. 11, ll. 17-19) One in the art would understand that this means the tape is applied via pressure. The reference also discloses the tape has an adhesive strength of not less than 267 gf/20mm.(Col. 5, ll. 25-27) Therefore the reference discloses adhesive strengths of greater than 267 gf/20mm.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al.(U.S. Patent 5,977,615) in view of Sakumoto et al.

Yamaguchi et al. discloses a method of mounting a chip on a lead frame by applying tape to the base of the frame, attaching the chip, and encapsulating the chip

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with resin. The tape can be removed after encapsulation.(Figure 23; Col. 19, ll. 40-53)

The reference discloses the tape is easily removable but does not disclose anything else about it. Sakumoto et al. discloses an adhesive tape for attachment to lead frames with a thermal shrinkage of less than 0.15% in the resin deposition temperature range.(Col. 7, ll. 56-59) Although the tape is not specifically disclosed as pressure sensitive, the tape is applied without the use of heat, but simply via attachment.(Col. 11, ll. 17-19) One in the art would understand that this means the tape is applied via pressure. Sakumoto et al. discloses that the tape assemblies are exposed to high temperatures(Col. 7, ll. 40-42) and movement of the wires due to thermal hysteresis is to be avoided.(Col. 9, ll. 1-11) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the tape of Sakumoto et al. in the process of Yamaguchi et al. since this would avoid movement of the wires attached to the chip at high temperature as disclosed by Sakumoto et al.(Col. 7, ll. 40-42; Col. 9, ll. 1-11)

Regarding claims 3 and 5, the reference also discloses the tape has an adhesive strength of not less than 267 gf/20mm.(Col. 5, ll. 25-27) Therefore the reference discloses adhesive strengths of greater than 267 gf/20mm.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. and Sakumoto et al. as applied to claim 1 above, and further in view of Oida et al.(WO 98/35382) U.S. Patent 6,291,274 is considered an English language translation and all column and line numbers refer to it.

The references cited above do not disclose replacing the lead frame of Yamaguchi et al. with a tape carrier. Oida et al. discloses tape carriers can be used in

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place of lead frames when encapsulating chips in resin.(Col. 10, ll. 39-45) It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the lead frame of Yamaguchi et al. with a tape carrier since such is well-known and conventional in the art as shown for example by Oida et al.(Col. 10, ll. 39-45)

Response to Arguments

8. Applicant's arguments filed 10/7/02 have been fully considered but they are not persuasive.

9. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection.

10. In response to applicant's argument that Yuji et al. is not directed to preventing leakage of resin during encapsulation, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Additionally, a reading of the art as a whole indicates this is a well-known and conventional reason for application of tape to a lead frame.

Regarding applicant's argument that Yuji et al. does not suggest a tape with low thermal shrinkage, Sakumoto et al. does. Either of the references can supply the motivation to combine.

Regarding applicant's argument that tapes having a thermal shrinkage above 3% have poor results, Sakumoto et al. suggests a tape with thermal shrinkage below 3%.

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Unexpected results cannot obviate an anticipation rejection. Additionally, there is no evidence these results are unexpected. One in the art would expect large thermal shrinkage of the tape to move the wires sufficiently to damage or break them, suggesting that low thermal shrinkage would be desirable.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Barbara J. Musser** whose telephone number is **(703)-305-1352**. The examiner can normally be reached on Monday-Thursday; alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on 703-308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


BJM
November 7, 2002


Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700